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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Wen-Jian Lin

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KNOBBE, MARTENS, OLSON & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER

TRAN, HOANG Q

ART UNIT

PAPER NUMBER

2874

MAIL DATE

DELIVERY MODE

07/22/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 22310223	Applicant(s) LIN ET AL.	
	Examiner HOANG TRAN	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 1-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :6/26/2009, 4/22/2009, 2/03/2009.

DETAILED ACTION

AMENDMENT

Receipt of applicant amendment submitted 4/22/2009 is acknowledged. Currently Claims 1-28 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 20-21, 23 and 26-28 are rejected under 35 U.S.C. 103 (a) as being unpatentable by the US Patent to Miles (5,835,255) in view of the NPL document to Matsumoto et al "Novel prevent method of stiction using silicon anodization for SOI".

In terms of claim 20, 21, and 23 Miles discloses an interferometer modulation pixel comprising a first electrode (Fig. 28: '1004'), a movable second electrode '1004' (See Claim 1) being situated above the first electrode and being parallel to the first electrode (Figure 28: 1006); two supports (1006) between the first electrode and the second electrode to form a cavity (1004) between the first and second electrodes (1004) wherein insulator layer is present (140);

Miles does not teach a hydrophobic layer.

Matsumoto teaches a hydrophobic (pg. 154 Col 2) are being used on a cavity-side surface of the first of a substrate in this instant the hydrophobic layer will be use on a surface area (page 153 and 154).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the teachings of Matsumoto with hydrophobic polymers and electrodes to make mechanical moving arm in an interferometer. Furthermore, Applicant describes the reason to apply such a layer is due to the excess of water [Disclosure: 0012]. The problem described by the applicant is known in the art as "stiction" wherein water may collect due manufacturing techniques. Matsumoto describes the reason why "stiction" is present (page 153 last paragraph) and a method to prevent "stiction" through the application of a SAM or fluorocarbon film which displays hydrophobic properties (page 154 Col 1). Since "stiction" can be commonly found in manufacturing semiconductors devices one of ordinary skill in the art would be motivated to use the solution provided by Matsumoto to prevent "stiction" from occurring due to an excess of water.

As to claim 26-28, the first electrode comprises a transparent conductive layer (142), a light-absorption layer (80), and an insulating layer (140), and wherein the movable second electrode is a light-reflection electrode (506 and 502) having a hydrophobic layer prevents the first electrode from adsorbing water molecules (See Claim 20 rejection).

Claims 22 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miles in view of Matsumoto as applied to claim 20 above, and further in view of Peterson (6,335,224)

Regarding claim 22, 24-25, Miles and Matsumoto discloses the invention of claim 20; however, Miles and Matsumoto does not explicitly disclose the molecular compound of the hydrophobic organic compound comprises silanes including hexamethyl disilane.

Peterson discloses in the Abstract that the microelectronic device is protected by a water adsorption resistant coating that can be chosen from a list of compounds including hexamethyl disilane for the compound exhibit the desired property of resistant to water adsorption. Furthermore, Peterson discloses the insulating layer comprises silicon nitride and the hydrophobic layer is positioned on the insulating layer (Fig. 2B '26').

It would have been obvious to one having ordinary skill in the art to recognize the teaching of Peterson would be applicable to the art of Pei in modifying Pei's prior art. The motivation for using the compounds as claimed is obvious to one having ordinary skill in the art for it's property of resisting water adsorption and is clearly taught in

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Peterson's prior art that such material is used to collectively package and protect the microelectronic devices.

Response to Arguments

Applicant's arguments, see remarks section, filed 4/22/2009 with respect to the rejection(s) of claim(s) 20, 21, 23, and 26-28 under 35 USC 103(a) have been fully considered and are non-persuasive.

The applicant argues that the prior art to Miles is not a micromechanical device.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. a micro mechanical device) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Further, the examiner found the argument non persuasive because the device of Miles is constructed or formed on a mirco scale (See dimension discussed Col 4 [20-35], Col 6 [5-20] wherein the mechanical limitation is met by the cavities and deflecting structures (Col 13 [30-60]).

The applicant argues that combination of Miles and Matsumoto is not obvious because Patent 6,020,047 to Everhart cites that SAMs base films both reflect and transmit visible light (Remarks Page 8). Therefore apply a SAM base film would

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preventing the device of Miles to function properly if the mirror layers did not adequately reflect light.

The examiner disagrees because the mirror of Miles is capable of both transmitting and reflecting (Col 15 [16-67]. Therefore adding an additional film using SAM base materials and techniques would not prevent the device of Miles from functioning since the SAM base material is capable of both transmitting and reflecting. The level of T/R can be adjusted by one of ordinary skill in the art. Further as cited in the rejection above, the SAM base film is used to prevent "stiction" which occurs in semi-conductor base material device. Since the device of Miles is a semiconductor device (Col 6 [20-55]) apply the teachings of Matsumoto would alleviating any "stiction" issues within the device Miles at the same time allowing it to function properly because SAM base materials films are capable of both transmitting and reflecting which performs the same function as the mirror of Miles. The amount of T/R can be adjusted by one of ordinary skill in the art to obtain the proper working conditions of specified application.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOANG TRAN whose telephone number is (571)272-5049. The examiner can normally be reached on 9:00AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Uyen-Chau Le can be reached on 571-272-2397. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hoang Tran/
Examiner, Art Unit 2874

/Uyen-Chau N. Le/
Supervisory Patent Examiner, Art Unit 2874

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